

In the Claims

Please delete claims 2 - 45 and substitute the following claims therefor:

-- 46. An anti-microbial composition according to Claim 1, wherein the surface tension of the second compound is 10 mN/m.

47. An anti-microbial composition according to Claim 1, wherein the first compound is hydrophobic.

48 An anti-microbial composition according to Claim 1, wherein the second compound is hydrophilic.

49. An anti-microbial composition according to Claim 1, wherein the first compound is hydrophobic and the second compound is hydrophobic.

50. An anti-microbial composition according to Claim 49, wherein the first compound is a second anti-microbial agent.

51. An anti-microbial composition according to Claim 50, wherein the second anti-microbial agent is a quaternary ammonium compound.

52. An anti-microbial composition according to Claim 50, wherein the first and/or second anti-microbial agent is of a polar nature.

53. An anti-microbial composition according to Claim 1, comprising at least one anti-microbial agent selected from bacteriocidal, fungicidal, algicidal, yeasticidal and moldicidal agents.

54. An anti-microbial composition according to Claim 1, wherein the first compound is a second anti-microbial agent.

55. An anti-microbial composition according to Claim 54, wherein the second anti-microbial agent is a quaternary ammonium compound.

56. An anti-microbial composition according to Claim 54, wherein the first and/or second anti-microbial agent is of a polar nature.

57. An anti-microbial composition according to Claim 54, wherein the second anti-microbial agent is a quaternary ammonium compound.

58. An anti-microbial composition according to Claim 54, wherein the quaternary ammonium compound has the general formula $R^1R^2R^3R^4N^+X^-$, in which one or two of the R groups are alkyl, optionally substituted by aryl or optionally interrupted by aryl or a heteroatom, and the other R groups are the same or different and are C₁ to C₄ alkyl groups.

59. An anti-microbial composition according to Claim 57, wherein the quaternary ammonium compound is selected from a benzalkonium halide, an aryl ring substituted benzalkonium halide and a dialkyldimethyl ammonium compound wherein the two non-methyl alkyl groups are selected from C₈ to C₁₂ alkyl.

60. An anti-microbial composition according to Claim 57, wherein the quaternary ammonium compound is selected from a benzalkonium halide, an aryl ring substituted benzalkonium halide and a dialkyldimethyl ammonium compound wherein the two non-methyl alkyl groups are selected from C₈ to C₁₂ alkyl.

61. An anti-microbial composition according to Claim 57, wherein the quaternary ammonium compound is selected from benenethanaminium N-dodecyl-N,N-dimethylchloride, benzenethanaminium N-dodecyl-N,N-dimethyl-N-tetradecylchloride and benzyl-C₁₂-C₁₆-alkyldimethyl-ammoniumchloride.

62. An anti-microbial composition according to Claim 1, comprising at least one first anti-microbial agent selected from an amphoteric compound, an iodophore, a phenolic compound, a quaternary ammonium compound, a hypochlorite and a nitrogen based heterocyclic compound.

63. An anti-microbial composition according to Claim 62, wherein the quaternary ammonium compound has the general formula $R^1R^2R^3R^4N^+X^-$, in which one or two of the R groups are alkyl, optionally substituted by aryl or optionally interrupted by aryl or a heteroatom, and the other R groups are the same or different and are C₁ to C₄ alkyl groups.

64. An anti-microbial composition according to Claim 62, wherein the quaternary ammonium compound is selected from a benzalkonium halide, an aryl ring substituted benzalkonium halide and a dialkyldimethyl ammonium compound wherein the two non-methyl alkyl groups are selected from C₈ to C₁₂ alkyl.

65. An anti-microbial composition according to Claim 62, wherein the quaternary ammonium compound is selected from benenethanaminium N-dodecyl-N,N-dimethylchloride, benzenethanaminium N-dodecyl-N,N-dimethyl-N-tetradecylchloride and benzyl-C₁₂-C₁₆-alkyldimethyl-ammoniumchloride.

66. An anti-microbial composition according to Claim 62, wherein the amphoteric compound is a long-chain N-alkyl derivative of an amino acid.

67. An anti-microbial composition according to Claim 62, wherein the amphoteric compound is selected from a long chain N-alkyl derivative of glycine, alanine and beta-amino butyric acid.

68. An anti-microbial composition according to Claim 62, wherein the amphoteric compound is selected from dodecyl beta-alanine, dodecyl beta-aminobutyric acid, dodeclamino-di(aminoethylamino)glycine and N-(3-dodecylamino)propylglycine.

69. An anti-microbial composition according to Claim 62, wherein the iodophore is selected from a complex of iodine or triiodine with polyvinylpyrrolidone, a polyether glycol, a polyvinyl alcohol, a polyacrylate, a polyamide, a polyalkylene and a polysaccharide.

70. An anti-microbial composition according to Claim 62, wherein the phenolic compound is selected from a methyl, ethyl, butyl, halo and aryl substituted phenol.

71. An anti-microbial composition according to Claim 62, wherein the phenolic compound is selected from 2-phenylphenol, 2-benzyl-4-chlorophenol, 2-cyclopentanol-4-chlorophenol, 4-t-amylphenol, 4-t-butylphenol, 4-chloro-2-pentylphenol, 6-chloro-2-pentylphenol, p-chlorometa-xylenol, 2,4,4-trichloro-2-hydroxydiphenol, thymol, 2-i-propyl-3-methylphenol, chlorothymol, 3-methyl-4-chlorophenol, 2,6-dichloro-4-n-alkyl phenols, 2,4-dichloro-meta-xylenol, 2,4,6-trichlorophenol and 2-benzyl-4-chlorophenol.

72. An anti-microbial composition according to Claim 62, wherein the hypochlorite is selected from a hypochlorite of an alkali metal and an alkaline earth metal.

73. An anti-microbial composition according to Claim 62, wherein the hypochlorite is selected from a hypochlorite of lithium, sodium, potassium and calcium.

74. An anti-microbial composition according to Claim 62, wherein the hypochlorite is a chlorinated trisodium phosphate or a hydrate thereof.

75. An anti-microbial composition according to Claim 62, wherein the hypochlorite is selected from chlorine dioxide or a precursor thereof, N,N-dichloro-4-carboxybenzenesulphonamide, 1,3-dichloro-5,5-dimethylhydantoin and a derivative of chloroisocyanuric acid.

76. An anti-microbial composition according to Claim 62, wherein the nitrogen based heterocyclic compound is selected from a pyridine derivative, a triazole, a thiazole and an imidazole.

77. An anti-microbial composition according to Claim 62, wherein the nitrogen based heterocyclic compound is selected from 4-pyridine carboxylic acid hydrazide, sodium 2-pyridinethiol and bis-(2-pyridylthio)zinc-1,1-dioxide.

78. A composition according to Claim 1, wherein the anti-microbial agent is selected from benzenethanaminium N-dodecyl-N,N-dimethylchloride, benzenethanaminium N-dodecyl-N-N-dimethyl-N-tetradecylchloride, benzyl-C₁₂-C₁₆-alkyldimethyl-ammoniumchloride, 2-phenyl phenol, 2-octyl-2H-isothiazol-3-one, 5-chloro-2-methyl-2H-isothiazol-3-one and 2-methyl-2H-isothiazol-3-one.

79. An anti-microbial composition according to Claim 1, wherein the second compound is a C₁₂ to C₂₀ surfactant or oil.

80. An anti-microbial composition according to Claim 1, wherein the second compound is selected from a silane, polysiloxane, polyethylene glycol, sodium lauryl sulphate and soya lecathin.

81. An anti-microbial composition according to Claim 1, wherein the second compound is polydimethylhydroxysiloxane.

82. An anti-microbial composition according to Claim 1, comprising from 1 to 4% by volume of the second compound.

83. An anti-microbial composition according to Claim 1, wherein the polar solvent is selected from water, an alcohol, an ester, a hydroxy or glycol ester, a polyol and a ketone.

84. An anti-microbial composition according to Claim 1, wherein the polar solvent is selected from isopropanol, diethylene glycol and dipropylene glycol.

85. An anti-microbial composition according to Claim 1, comprising from 1 to 70% by volume of the polar solvent.

86. An anti-microbial composition according to Claim 1, wherein the composition comprises 32% by volume of a mixture of benzenethanaminium N-dodecyl-N,N-dimethylchloride and benzenethanaminium N-dodecyl-N,N-dimethyl-N-tetradecyl-chloride (2.33:1), 6.0% by volume of a mixture of benzyl-C₁₂-C₁₆-alkyldimethyl-ammoniumchloride and 2-phenyl phenol (2:1), 6.0% by volume 2-octyl-2H-isothiazol-3-one, 16.0% by volume of a mixture of 5-chloro-2-methyl-2H-isothiazol-3-one and 2-methyl-2H-isothiazol-3-one (3:1), 1.0% by volume a blend of polysiloxanes and 39% by volume isopropanol.

87. An anti-microbial composition according to Claim 1, wherein the composition comprises 32% by volume of a mixture of benzenethanaminium N-dodecyl-N,N-dimethylchloride and benzenethanaminium N-dodecyl-N,N-dimethyl-N-tetradecyl-chloride (2.33:1), 6.0% by volume of a mixture of benzyl-C₁₂-C₁₆-alkyldimethyl-ammoniumchloride and 2-phenyl phenol (2:1), 6.0% by volume 2-octyl-2H-isothiazol-3-one, 16.0% by volume of a mixture of 5-chloro-2-methyl-2H-isothiazol-3-one and 2-methyl-2H-isothiazol-3-one (3:1), 1.0% by volume of polydimethylhydroxysiloxane and 39% by volume isopropanol.

88. A formulation comprising the anti-microbial composition according to Claim 1, and a functional material.

89. A formulation according to Claim 88, wherein the functional compound is selected from plastics, fibres, coatings, films, laminates, adhesives, sealants, clays, china, ceramics, concrete, sand, paints, varnishes, lacquers, cleaning agents and settable or curable compositions such as fillers, grouts, mastics and putties.

90. A formulation according to Claim 88, wherein the formulation comprises from 0.1 to 5.0% by weight of the anti-microbial composition.

91. A formulation according to Claim 88, wherein the formulation comprises from 0.5 to 2.0% by weight of the anti-microbial composition.

92. A method of using an anti-microbial composition according to Claim 1, to prevent the formulation of colonies of microorganisms on a surface at which it is provided.

93. A method of using an anti-microbial composition according to Claim 86, to prevent the formulation of colonies of microorganisms on a surface at which it is provided.

94. A method of using an anti-microbial composition according to Claim 87, to prevent the formulation of colonies of microorganisms on a surface at which it is provided.

95. A method of using a formulation according to Claim 88, to prevent the formulation of colonies of microorganisms on a surface at which it is provided.

96. A method of using a formulation according to Claim 89, to prevent the formulation of colonies of microorganisms on a surface at which it is provided.

97. A method of using a formulation according to Claim 90, to prevent the formulation of colonies of microorganisms on a surface at which it is provided.

98. A method of using a formulation according to Claim 91, to prevent the formulation of colonies of microorganisms on a surface at which it is provided.

99. A method of manufacturing an anti-microbial composition according to Claim 1, the method comprising the steps of (i) mixing the first compound and the first anti-microbial agent together, (ii) adding the second compound to the mixture of the first compound and the first anti-microbial agent, (iii) adding the polar solvent to the mixture of the first and second compounds and first anti-

microbial agent and (iv) agitating the resulting mixture until a clear solution is formed.

100. A method of manufacturing a formulation comprising the step of adding the anti-microbial composition of Claim 1 to a functional material.

101. A composition generally as herein described.

102. A formulation comprising the anti-microbial composition generally as herein described.

103. An anti-microbial composition comprising (i) a first compound having a high surface tension of from 20 to 35 mN/m, (ii) a second compound having a low surface tension of from 8 to 14 mN/m and selected from the group consisting of C₁₂ to C₂₀ surfactant or oils, silanes, polysiloxanes, polyethylene glycols, sodium lauryl sulphates, soya lecathins, and polydimethylhydroxysiloxane, (iii) a first anti-microbial agent selected from amphoteric compounds, iodophores, phenolic compounds, quaternary ammonium compounds, hypochlorites and nitrogen based heterocyclic compounds and (iv) a polar solvent, wherein the composition acts substantially to prevent the formation of microbial colonies. - -

Please charge any additional fees that may be required to Deposit Account No.

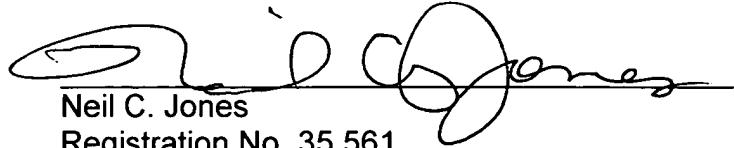
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Respectfully requested,

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

No claims were amended. All new claims are as shown in the Preliminary Amendment.